AMENDMENTS TO THE CLAIMS

Presented below is a complete set of claims with current status indicators.

1. (currently amended) In an implantable medical device for implant within a patient, a method comprising:

detecting a plurality of individual T-waves within cardiac signals;

determining an energy value for each of the plurality of individual T-waves;

calculating a plurality of slopes for each of the plurality of individual T-waves;

for each of the plurality of individual T-waves, determining the maximum slope from the plurality of slopes and comparing the maximum slope to a threshold maximum slope and the energy value to a threshold energy value; and

for each of the plurality of individual T-waves, detecting cardiac ischemia when the energy value and the maximum slope of the ~~individual T-waves exceed their~~ T-wave exceeds its respective threshold.

2. (previously canceled)

3. (previously presented) The method of claim 1 wherein detecting a plurality of T-waves comprises discarding T-waves associated with one of fusion beats and ectopic beats.

4. (previously presented) The method of claim 1 wherein detecting T-waves comprises:

sensing bipolar signals using a bipolar lead mounted within the atria and detecting atrial events therein;

sensing unipolar signals using a unipolar lead mounted within the heart, the unipolar signals having potentially both atrial and ventricular events therein;

eliminating the atrial events from the unipolar signals to leave substantially only ventricular events therein; and

examining the ventricular events remaining within the remaining unipolar signals to identify T-waves.

5. (previously presented) The method of claim 1 wherein detecting T-waves comprises:

identifying peaks of the T-waves; and

specifying T-wave windows based on the T-wave peaks.

6. (previously presented) The method of claim 5 wherein specifying T-wave windows based on the T-wave peaks comprises:

identifying a starting point of the T-wave window as commencing 150 milliseconds (ms) prior to a T-wave peak; and

identifying an ending point of the T-wave window as terminating 150 ms after the T-wave peak.

7. (previously presented) The method of claim 1 wherein detecting T-waves comprises:

identifying peaks of ventricular depolarization events; and

specifying T-wave windows based on the depolarization event peaks.

8. (previously presented) The method of claim 7 wherein specifying T-wave windows based on the depolarization event peaks comprises:

identifying a starting point of the T-wave window as commencing 80 milliseconds (ms) after the depolarization event peak; and

identifying an ending point of the T-wave window as terminating 480 ms after the depolarization event peak.

9. (previously presented) The method of claim 1 wherein determining energy values associated with the plurality of T-waves comprises calculating:

$$E_{T-Wave} = \sum_{n=Tstart}^{Tend} s(n)$$

wherein s(n) is a digitized version of the cardiac signal, $T_{start}$ and $T_{end}$ are start and end points, respectively, of the T-wave, and n represents individual samples of the digitized version of the cardiac signal.

10. (previously presented) The method of claim 1 further comprising:

detecting a ventricular depolarization event within the cardiac signals that corresponds to the T-wave;

determining whether the T-wave was the result of a paced beat or a sinus beat; and

wherein detecting cardiac ischemia takes into account whether the T-waves are the result of a paced beat or a sinus beat.

11. (previously presented) The method of claim 10 wherein, in response to a sinus beat, detecting cardiac ischemia comprises:

determining a peak amplitude of the depolarization event that corresponds to the T-wave;

normalizing the energy values of the T-waves based on the peak amplitude of the corresponding depolarization event;

determining a running average of normalized energy values of all sinus T-waves;

calculating a difference between a current T-wave energy value and the sinus T-wave running average; and

determining whether the difference exceeds a predetermined sinus beat threshold.

12. (currently amended) The method of claim 11 wherein, in response to a ~~sensed~~ sinus beat, detecting cardiac ischemia comprises:

determining whether the ~~sensed~~ sinus beat is an ectopic beat and, if so, ignoring the T-wave associated with the ectopic beat in the detection of cardiac ischemia.

13. (previously presented) The method of claim 10 wherein, in response to a paced event, detecting cardiac ischemia comprises:

determining a measure of evoked response for the depolarization event that corresponds to the T-wave;

normalizing the energy values of the T-waves based on the evoked response of the corresponding depolarization event;

determining a running average of normalized energy values of paced T-waves;

calculating a difference between a current paced T-wave energy value and the paced T-wave running average; and

determining whether the difference exceeds a predetermined paced beat threshold.

14. (previously presented) The method of claim 13 wherein, in response to a paced event, detecting cardiac ischemia comprises:

determining whether the paced beat is a fused beat and, if so, ignoring the T-wave associated with the fused beat in the detection of cardiac ischemia.

15. (currently amended) The method of claim 1 further comprising:

generating [[a]] an ischemia warning signal indicative of the onset of ischemia.

16. (currently amended) The method of claim 15 further comprising generating an arrhythmia warning signal indicative of an arrhythmia and having a first stimulation frequency and, wherein the ischemia warning signal is an internal warning signal applied directly to patient tissue and has a stimulation frequency different from ~~any other warning signal generated by the device~~ the first stimulation frequency.

17. – 20 (canceled)

21. (currently amended) In an implantable medical device for implant within a patient, a system comprising:

means for detecting a plurality of T-waves within cardiac signals;

means for determining energy values associated with the plurality of T-waves;

means for calculating a plurality of slopes for each of the plurality of T-waves and determining a maximum slope for each of the plurality of T-waves from the plurality of slopes associated with the T-wave;

means for comparing the maximum slope of each of the plurality of T-waves to a threshold maximum slope and the energy value of each of the plurality of T-waves to a threshold energy value; and

means for detecting, for each T-wave, cardiac ischemia when the energy value and the maximum slope of ~~one or more of the individual T-waves exceed their respective threshold~~ the T-wave exceeds its respective threshold.

22. (canceled)

23. (previously presented) The method of claim 1 wherein products of the energy values and the maximum slopes are used to detect cardiac ischemia.